Acknowledgments

This dissertation has been performed in the group of Prof. Dr. h.c. Günter Kaindl at the Institut für Experimentalphysik of the Freie Universität Berlin. It was financially supported by the Bundesministerium für Bildung, Forschung und Technologie (BMBF), projects 05 SF8 KEC8 and 05 KS1 KEE8 and by the Deutsche Forschungsgemeinschaft (DFG) through SFB 290.

To the completion of this work, many people have contributed in many different ways to all these wonderful people I worked together with, and who contributed to my pleasure during this time, my most sincere thanks. Several persons deserve a special mention. First of all, I would like to thank Prof. Günter Kaindl for giving me the opportunity to work on this exciting field and for the motivating working conditions in his group. I thank Prof. Karsten Horn for co-assessing this dissertation.

My particular thanks go to my supervisor Dr. habil. Eugen Weschke, who was and is always a source of inspiration and motivation. I gratefully acknowledge his support in the discussion of ideas and results as well as in the experiments, which largely contributed to the success of this work, and that made this time a real pleasure. In the same manner I have to thank Dr. Christian Schüßler-Langeheine; from and with him I learned the way to perform scattering experiments. From his continuous support, the discussions, and all the day and night shifts spent together during the beam times, I profited a lot.

During this work, I had the pleasure and privilege to collaborate closely with several colleagues in the group, namely Enrico Schierle, whose Diplomarbeit deals with the finite-size effect in Ho metal films, Alexei Yu. Grigoriev, Denis V. Vyalikh, and Robert Meier. I would like to thank all members of the group of Prof. Kaindl for the countless discussions and for the always friendly atmosphere, in which I could perform this work.

I gratefully acknowledge the collaboration and discussions with Dr. Peter J. Jensen, who performed the mean-field calculations presented in this work. The experiments on the MBE-grown Ho films were performed in a pleasant collaboration with the group of Prof. Hartmut Zabel from the Ruhr-Universität Bochum. In particular, I enjoyed the collaboration with Vincent Leiner, who performed the complimentary neutron-scattering experiments on these samples at the ILL reactor in Grenoble.

The magnetic-scattering experiments in the conventional x-ray region were performed at the ESRF in collaboration with Dr. Gerhard Grübel. The soft x-ray experiments were carried out at BESSY II in Berlin. The structure of the thin Ho films was studied at HASYLAB in Hamburg. I am very grateful to the scientific and technical staff of these facilities for their assistance during the beam times, and for the good experimental conditions I found there.

During my stay at the University of Tokyo, I had the privilege to work in the group of Prof. Atsushi Fujimori. I would like to thank especially Yukiaki Ishida, Jongil Hwang, and Kozo Okazaki for their kind introduction into the Japanese way of performing experiments, and - as far as possible in the short time - into the Japanese way of life.